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Phosphatidylinositol 3-kinase: Structure and Expression of the 110 Kd Catalytic Subunit

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Purified bovine brain phosphatidylinositol 3-kinase (PI3-kinase) is composed of 85 kd and 110 kd subunits. The 85 kd subunit (p85 alpha) lacks PI3-kinase activity and acts as an adaptor, coupling the 110 kd subunit (p110) to activated protein tyrosine kinases. Here the characterization of the p110 subunit is presented. cDNA cloning reveals p110 to be a 1068 aa protein related to Vps34p, a S. cerevisiae protein involved in the sorting of proteins to the vacuole. p110 expressed in insect cells possesses PI3-kinase activity and associates with p85 α into an active p85 α-p110 complex that binds the activated colony-stimulating factor 1 receptor. p110 expressed in COS-1 cells is catalytically active only when complexed with p85 alpha.

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